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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,415	09/30/2003	Norihiro Ookawa	16869G-087600US	8073

20350 7590 03/02/2006

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EXAMINER
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WATKO, JULIE ANNE

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/676,415

Applicant(s)

OOKAWA ET AL.

Examiner

Julie Anne Watko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 January 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.  
4a) Of the above claim(s) 6-10 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-5 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 09/30/2003.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of group I, claims 1-5, in the reply filed on January 9, 2006, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

3. The drawings are objected to because:

Separate figures are not separately labeled. See, for example, Figs. 3(a)-3(b) and Figs. 8-11.

Figures 2-3, at least, should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

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drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the elected claims are directed.
5. The abstract of the disclosure is objected to because it contains more than a single paragraph. Correction is required. See MPEP § 608.01(b).
6. The disclosure is objected to because of the following informalities: The Examiner objects to "Table 1" in ¶ 0045 because a table without a table number previously appears in ¶ 0028.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuzawa et al (US Pat. No. 6338899 B1).

As recited in claim 1, Fukuzawa et al show a magnetoresistive head (see Fig. 17) comprising: a lower magnetic shield 11 formed on a substrate 10, a magnetic domain control underlayer 141 formed on the lower magnetic shield; a multi-layered film (including 142, 143, 144, 145 and 146) having an underlayer 142 formed on the magnetic domain control underlayer, a free layer 146, a non-magnetic layer 145, a pinned layer 144, and an anti-ferromagnetic layer 143 for pinning the magnetizing direction of the pinned layer; a magnetic domain control film 15 formed on the magnetic domain control underlayer 141, said magnetic domain control film being in contact with both of lateral ends in the direction of the track width of the free layer 146, for conducting magnetic domain control of the free layer; a pair of electrode films 16 for supplying an electric current to the multi-layered film; and an upper magnetic shield 18 formed on the multi-layered film and the electrode film.

As recited in claim 2, Fukuzawa et al show a magnetoresistive head (see Fig. 17) comprising: a lower magnetic shield 11 formed on a substrate 10; a magnetic domain control underlayer 141 formed on the lower magnetic shield; a multi-layered film (including 142, 143, 144, 145 and 146) having an underlayer formed on the magnetic domain control underlayer, a free layer 146, a non-magnetic layer 145, a pinned layer 144, and an anti-ferromagnetic layer 143 for pinning the magnetizing direction of the pinned layer; a magnetic domain control film 15 formed on the magnetic domain control underlayer 141, said magnetic domain control film being

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in contact with both of lateral ends in the direction of the track width of the free layer 146, for conducting magnetic domain control of the free layer; a dielectric film 17 formed on the magnetic domain control film; and an upper magnetic shield 18 formed on the multi-layered film and the dielectric film.

As recited in claim 3, Fukuzawa et al show that the magnetic domain control underlayer is formed of a non-magnetic material selected from one or more of Cr, Ti, W, Mo, V, Mn, Nb, and Ta ("5 nanometer Ta", see col. 30, line 47, for example).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuzawa et al (US Pat. No. 6338899 B1).

Fukuzawa et al show a head as described above.

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Fukuzawa et al are silent regarding the dimensional limitations and ranges recited in claims 4-5.

It is well established that there is no invention in altering the dimensions of a known apparatus, absent unexpected results due to the claimed dimensions. the instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the magnetic head of Fukuzawa et al satisfy the relationships set forth in claim 4. The rationale is as follows: one of ordinary skill in the art would have been motivated to have had the magnetic head of Fukuzawa et al satisfy the relationships set forth in claim 4 since it is notoriously old and well known in the magnetic head art to routinely modify a magnetic head structure in the course of routine optimization /experimentation and thereby obtain various optimized relationships including those set forth in claim 4.

Moreover, absent a showing of criticality (i.e., unobvious or unexpected results), the relationships set forth in claim 4 are considered to be within the level of ordinary skill in the art.

Additionally, the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some range, variable or other dimensional limitation within the claims, patentability cannot be found.

It furthermore has been held in such a situation, the Applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected

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results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pinarbasi (US Pat. No. 6238531 B1) shows hard bias layer 235 in contact with free layer 210, and further shows underlayer 285 (see Fig. 2A).

Tornig et al (US Pat. No. 6447689 B1) show seed layer 12 and protective layer 151 (see Fig. 10).

Tornig et al (US Pat. No. 6428714 B1) shows seed layers 16 and 52 (see Fig. 7).

Chang et al (US PAP No. 20040170867 A1) show seed layer 12, metal oxide underlayer 14, free layer 14 formed on the metal oxide underlayer 13, and longitudinal biasing layers 24A-B formed on seed layer 12 and in contact with ends of the free layer 14 (see Fig. 1, for example).

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (571) 272-7597.



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The examiner can normally be reached on T11A-5P W3P-9P Th11:30A-10P F10A-8:30P  
SatNoon-8:30P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on (571) 272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Julie Anne Watko  
Primary Examiner  
Art Unit 2653

February 26, 2006  
JAW

A handwritten signature in black ink, appearing to read 'Julie Anne Watko', with a stylized, flowing script.